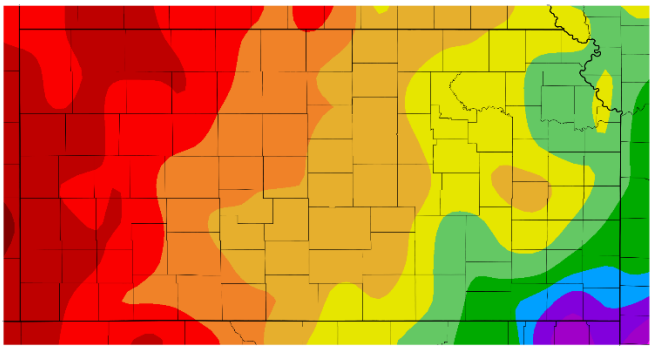
Kansas- Nebraska Big Blue River Compact Meeting May 13, 2021
Report by Kansas Department of Agriculture- Division of Water Resources
Topeka Field Office- Katherine A. Tietsort

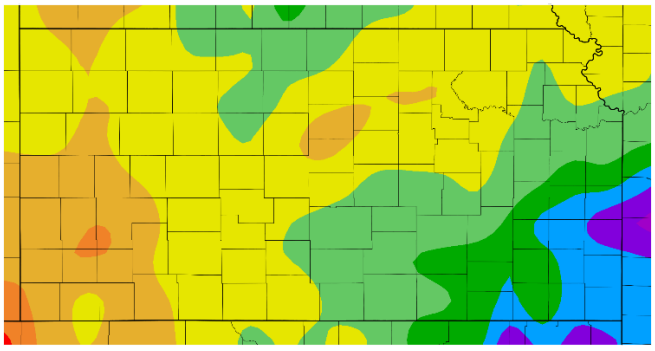
Climatic Conditions- Precipitation & Temperatures

Precipitation has been mostly uniform across the basin during the 2020 calendar year although that reflects a rather wide variance from normal. The High Plains Regional Climate Center reported between 25 and 35 inches of precipitation in calendar year 2020 across the entire Big and Little Blue River basin area in Kansas, including the tributary basins. This represents 80 to 110% of normal precipitation for the year. Precipitation ranged from about 3 inches greater than normal to 6 inches below normal, for the year. So far this year, the portion of the basin in Kansas has received 4 to 6 inches of precipitation, which is normal to 3 inches above normal precipitation.

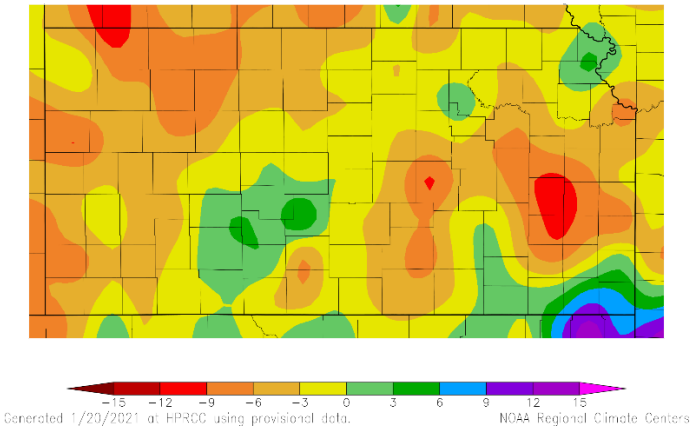
Precipitation (in)
1/1/2020 – 12/31/2020



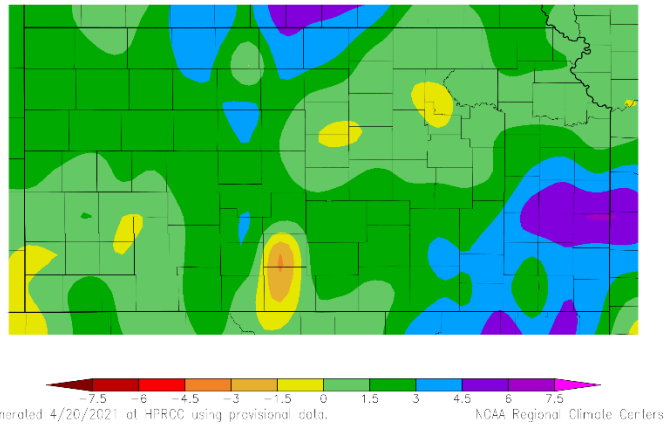
Precipitation (in)
1/1/2021 – 3/31/2021



Departure from Normal Precipitation (in)
1/1/2020 – 12/31/2020

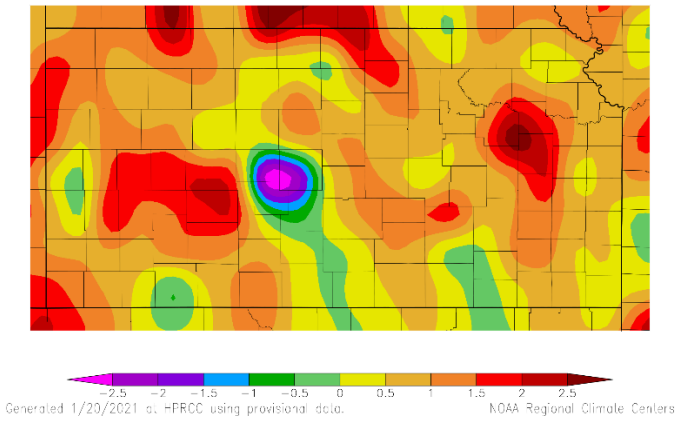


Departure from Normal Precipitation (in)
1/1/2021 – 3/31/2021

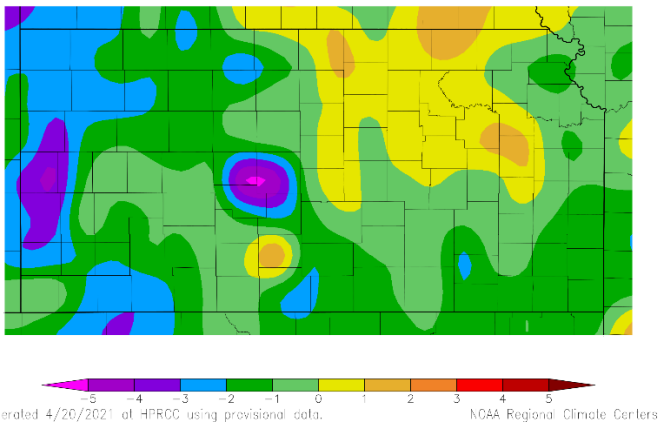


Temperatures for the calendar year 2020 ranged from 0.5 degree colder to 1.5 degree warmer. So far in 2021, temperatures have ranged from 1 degree cooler to 2 degrees warmer. We are seeing the trend from last year continue, which is reflected in the Standardized Precipitation Index. The Standardized Precipitation Index (SPI) is a statistical method for assessing conditions based solely on rainfall data that is independent of average precipitation values. SPI works well because it takes rainfall data represented by a Gamma distribution, fits it into a bell curve, and then computes the data to show values independent of location and range of values so that different seasons and climate areas are all represented equally. The SPI showed a generally normal trend for the last year, which is continuing into this spring. Both time frames are in the near normal category, which is up to .5 either side of zero on the scale. Ranges greater than 1 either direction on the scale mark moderate drought and moderate wet conditions.

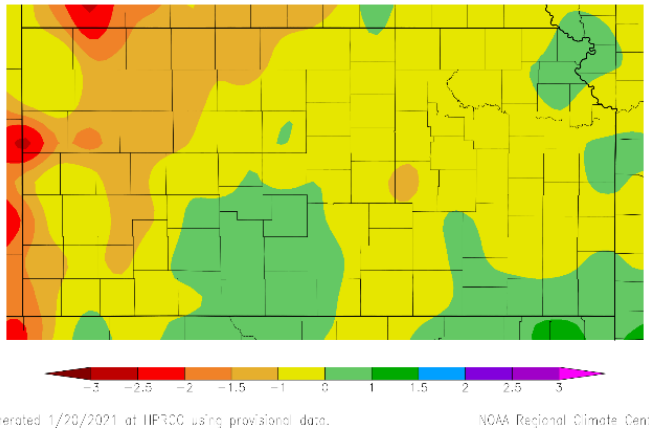
Departure from Normal Temperature (F)
1/1/2020 – 12/31/2020



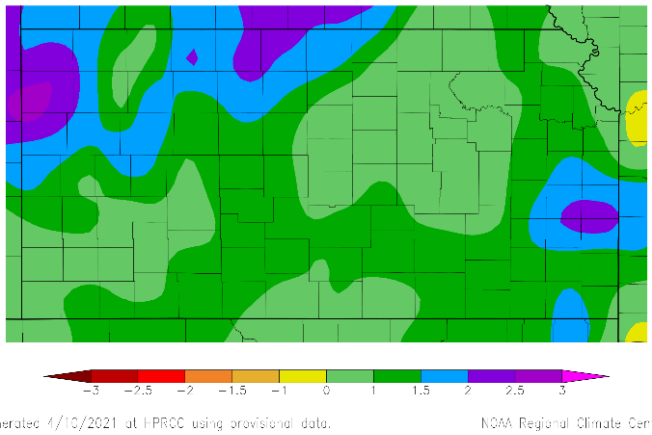
Departure from Normal Temperature (F)
1/1/2021 – 3/31/2021



12-Month SPI
1/1/2020 – 12/31/2020



3-Month SPI
1/1/2021 – 3/31/2021



Streamflow and Administration Within the Big Blue Compact Basin

Statistics reflect 36 years of data at Marysville (Big Blue) and 62 years of data at Barnes (Little Blue).

In 2020, and in early 2021, streamflow reflected peak runoff periods that occurred in spring then again through the summer at both gages. Interestingly, the peak runoff events appear to have occurred a little later in the summer season in 2020 than the statistical values indicate they normally occur.

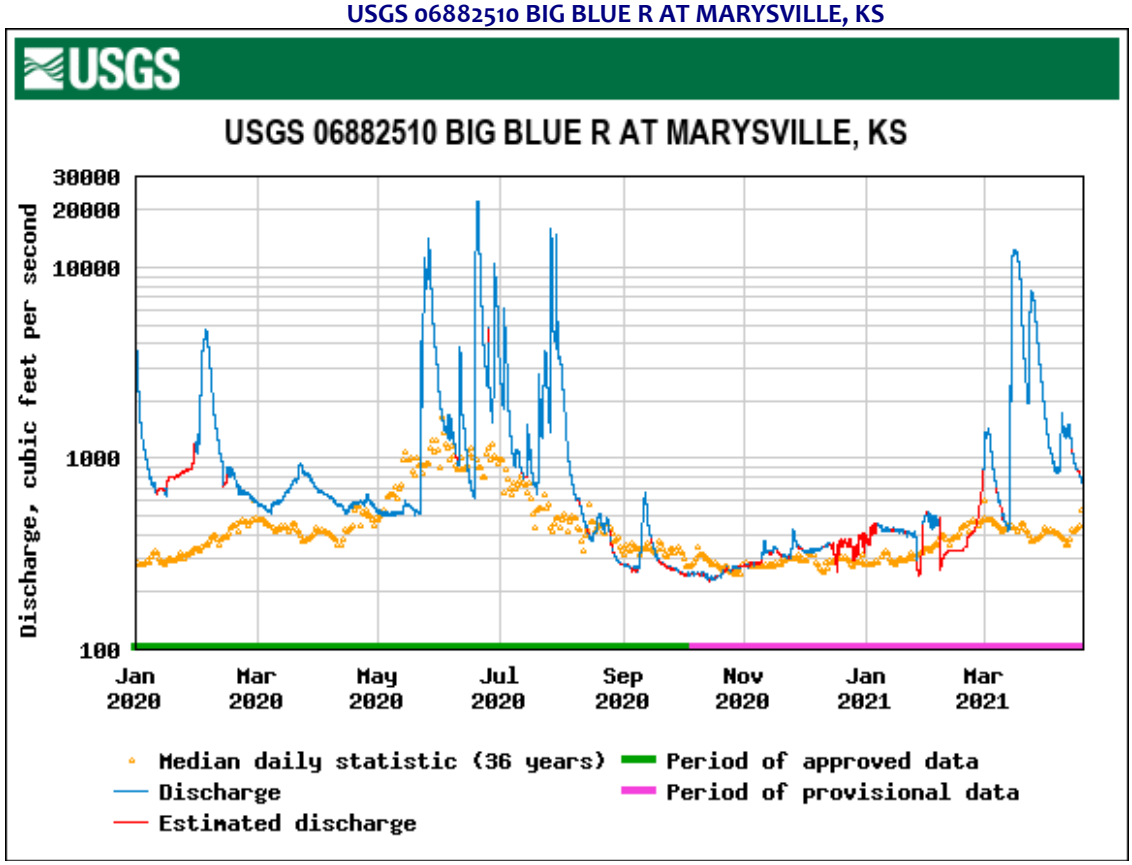
We did not trigger Minimum Desirable Streamflow (MDS) criteria within the Basin and MDS administration of junior rights did not occur in the basin or tributary basins in 2020 nor in 2021 to date.

Minimum Desirable Streamflows (cfs)

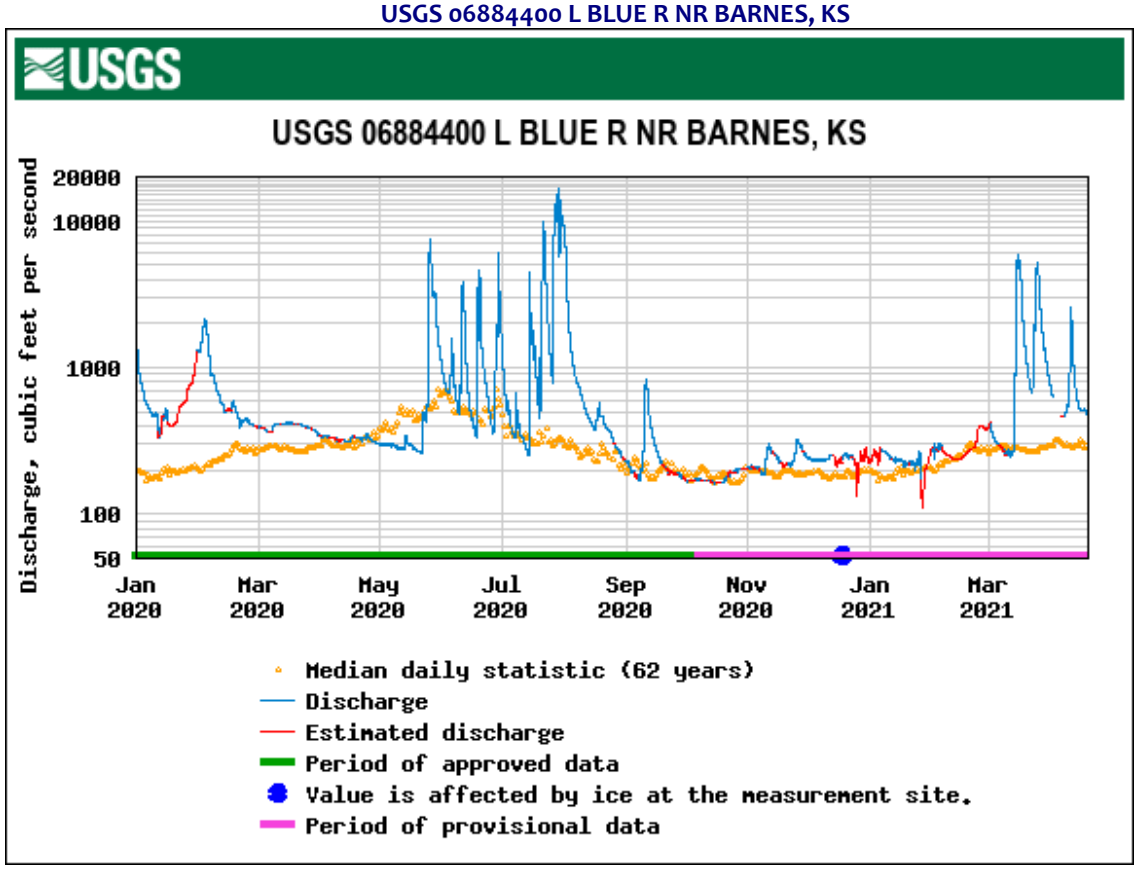
Watercourse	Month											
	J	F	M	A(a)	M(a)	J(a)	J	A	S	O	N	D
Big Blue												
Marysville	100	100	125	150	150(d)	150(d)	80	90	65	80	80	80
Little Blue												
Barnes	100	100	125	150	150(d)	150(d)	75	80	60	80	80	80

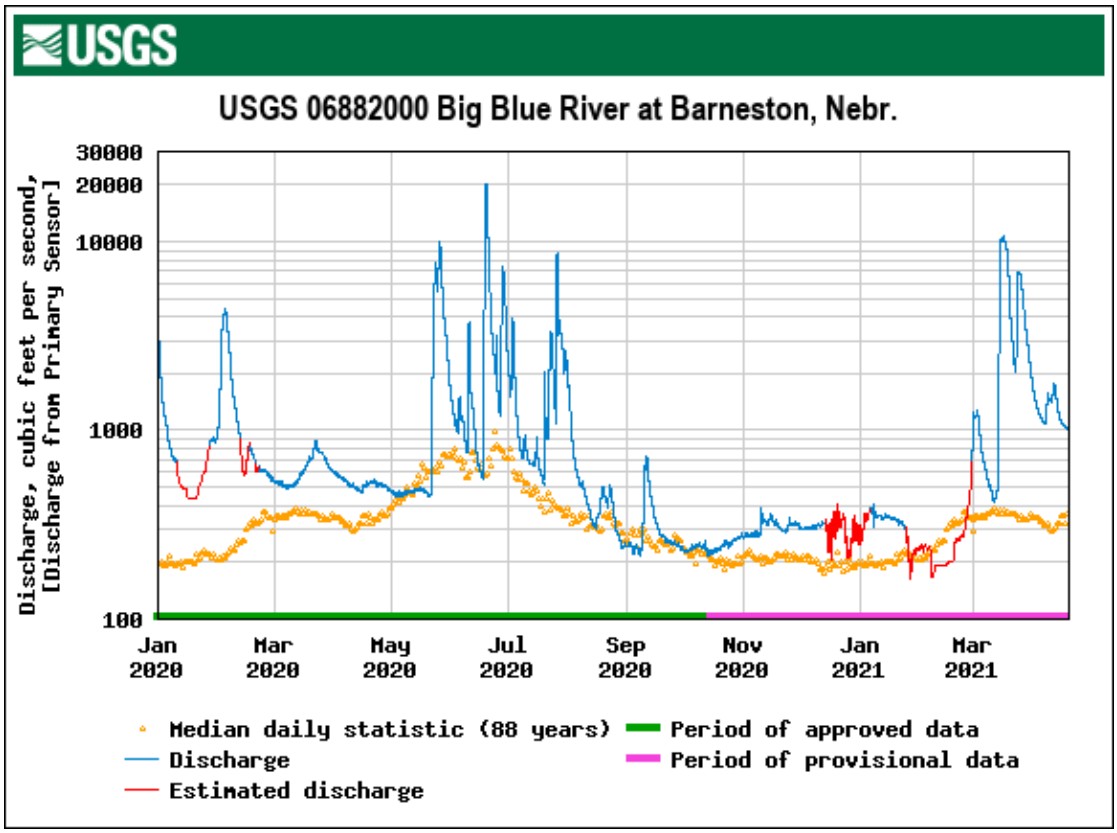
(d) Subject to the stateline flows contained in the Blue River Compact.

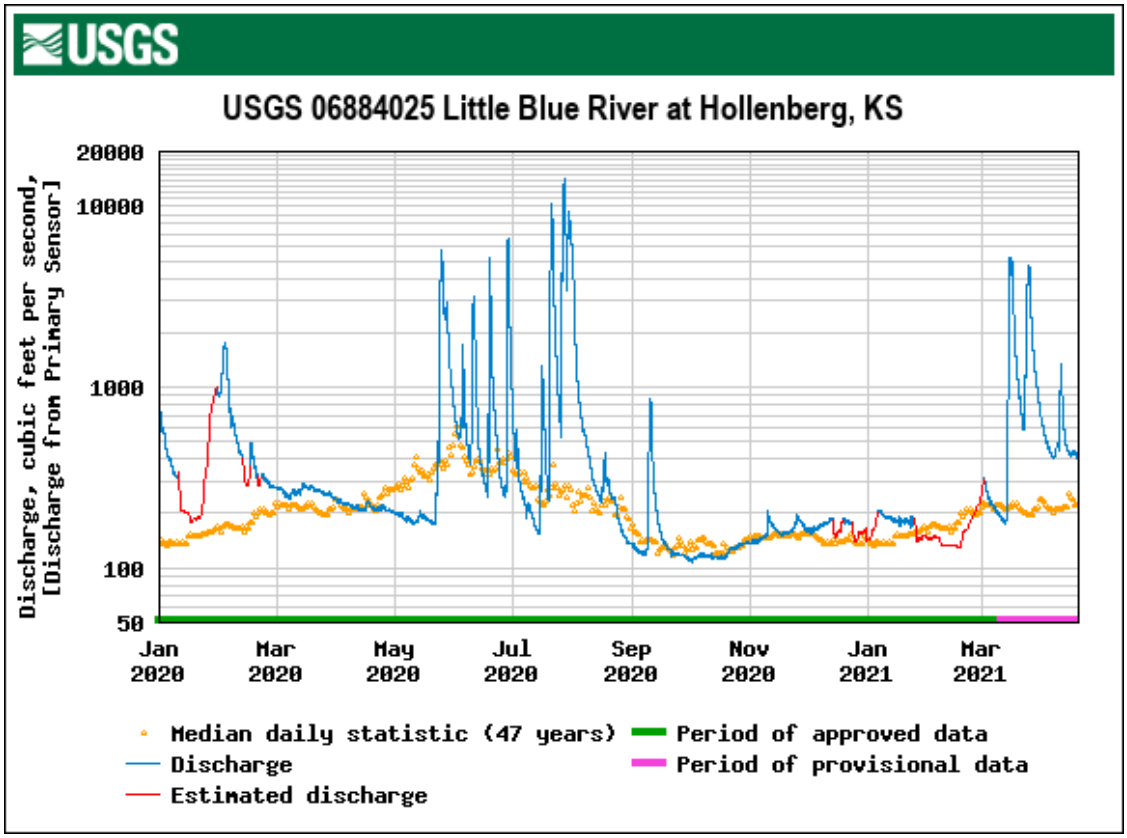
USGS 06882510 BIG BLUE R AT MARYSVILLE, KS



USGS 06884400 L BLUE R NR BARNES, KS







The compact gages at Barneston and Hollenberg reflected more normal conditions throughout 2020 as well. For the period of 1/1/2021 through today, flows remained sufficient to avoid any administration in the Big Blue River, Little Blue River, Mill Creek, or Black Vermillion River, basins, as stated above.

Administration Activities

After an unusual 2019 in which no administration occurred statewide, 2020 was a more normal year with administration activities noted below.

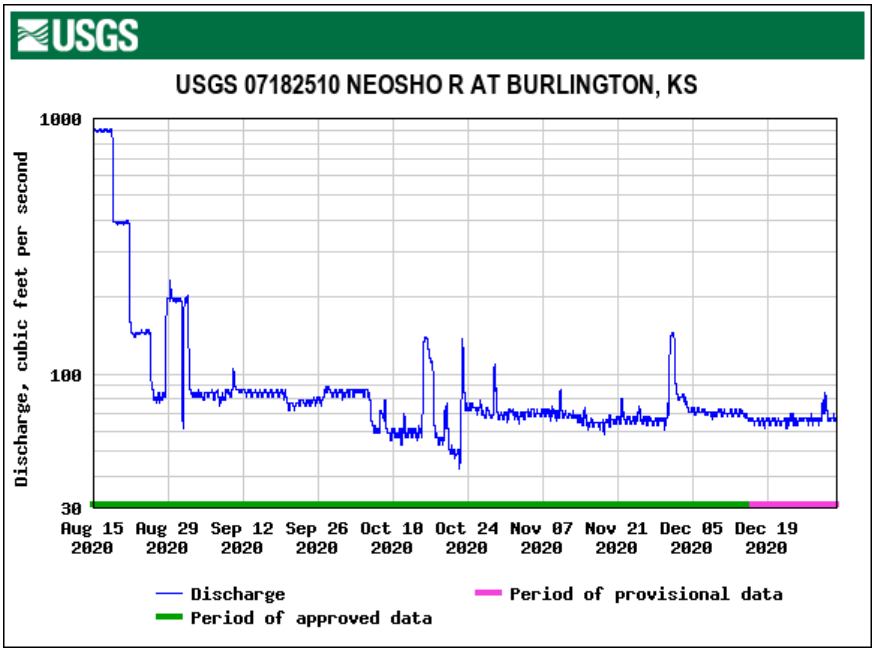
In 2020, a total of 9 water right files were administered for Minimum Desirable Streamflow (MDS) in Kansas, as follows:

MDS Stream	Administration Began	Administration Ceased	Files Administered
Little Arkansas River	September 28, 2020 (Above Alta Mills)	February 5, 2021	9

In 2021, no water right files have been or are being administered for MDS in either the Topeka Field Office area or the Compact area. Statewide, the only MDS administration which has occurred in 2021 was the continuation of the 2020 administration on the Little Arkansas River, which was rescinded in February 2021. Pursuant to K.S.A. 82a-706b, KDA-DWR protects water released from storage in Federal Reservoirs. In 2020 and so far in 2021, a total of 87 water rights were administered in Kansas for Protection as follows:

Stream	Administration Began	Administration Ceased	Files Administered
Neosho River	September 8, 2020	April 30, 2021	10
Verdigris River, Fall River, and Elk River	October 16, 2020	November 20, 2020	77

While no administration occurred in the Compact Basin, the southern half of the Topeka Field Office territory struggled with flows on and off in 2020, particularly from late summer on. We administered the upper Neosho between Council Grove Reservoir and the City of Emporia with Orders Protecting Releases for the City of Emporia from the Marketing pool of the Council Grove Reservoir and water quality releases from September 8, 2020 through April 30, 2021. This Order was issued to owners of 10 files that divert in that stretch. Flows have finally recuperated on the upper end of this system allowing us to rescind the orders. Additionally, we worked closely with our water right holders and the Tulsa USACE on a stilling basin dewatering and inspection at John Redmond Reservoir in fall and also at Toronto Reservoir. The project at Redmond occurred in late October when recreational diversions normally start to peak and we worked closely in partnership with the Corps, water right holders and the energy sector to minimize and mitigate impacts to our users. It was really a success story all around since we managed to keep what we needed or about 80-90 cfs flowing through the states bypass line from Redmond to downstream of the stilling basin to satisfy water right diverters during the project; many users pushed back diversion to make this work and the Corps minimized inspection time to a very brief dewatering.

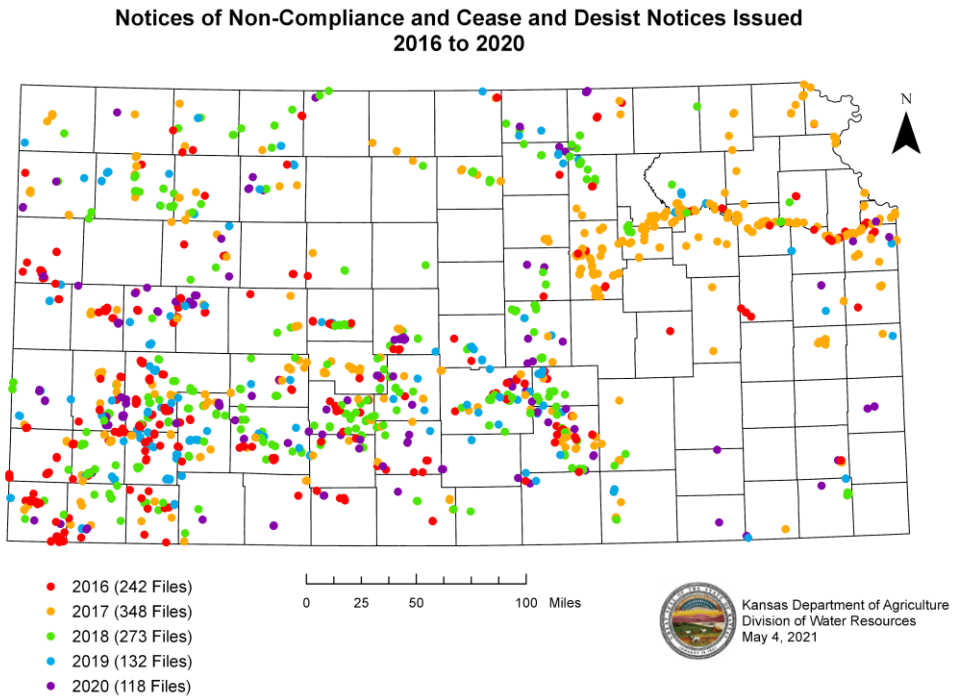


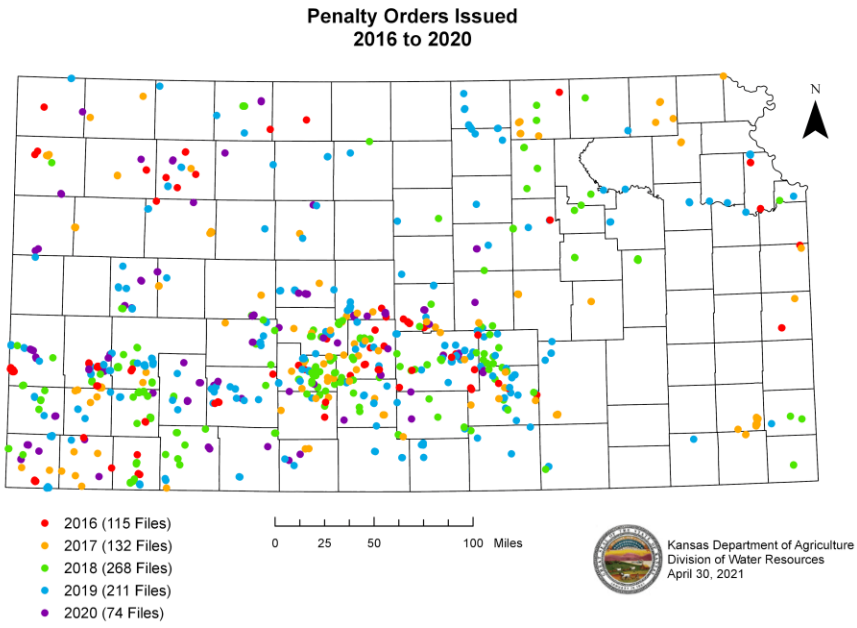
We have reported a number of times on the Lower Republican River Stakeholder group that has worked to establish a Special Irrigation District. Although bylaws were instituted and the Board was put in place, additional progress has not occurred. The necessary legislation to authorize the District was not introduced in this session. The main challenge for this group is obtaining permanent storage space. To obtain this storage space in Harlan reservoir, the USACE would need to do a reallocation study or be otherwise addressed.

Compliance & Enforcement Activities

In 2020, KDA-DWR sent Notices of Non-Compliance (NONC) or Cease and Desist (CD) Notices on 18 files in the Topeka Field Office area (eastern Kansas) and 118 files statewide. 2 NONCs were issued in the Compact area. One was for a groundwater irrigation right for wells lacking water level measurement tubes and well logs. The other was for a surface water irrigation right for failure to install a water flowmeter. The Topeka Field Office issued 2 penalty orders in 2020 to a PWS with recurrent water use reporting issues. No penalty orders were issued in the Compact area in 2020. Statewide, DWR issued penalties on 74 water right files in 2020. Thus far in 2021, 2 CDs have been issued in the Compact area. Both were for surface water irrigation rights for failure to install a water flowmeter. Thus far in 2021, no penalty orders have been issued in the Compact area.

With COVID-19 impacting some of our activities, the Topeka Field Office has shifted to focusing on working through all files needing any type of investigation/inspection regardless of the reason or rank of the priority of the work by county, starting with some of our more isolated counties. Staff have primarily worked in 18 of the 44 TFO countues. We have completely wrapped up work in about 10 counties. So far in 2021, we've issued 2 overpumping penalties and 2 water use reporting penalties (not in this basin) and 22 formal cease and desist orders, 2 in this basin discussed above. The formal cease and desist orders are going out to long term non-users who were previously issued informal Notices of Non-Compliace Cease Diversion for lack of metering on non-used files to get formal orders in place that carry penalties if violated as we work through the files in their county. We are seeing ownership changes occurring or owners are creating henceforth files in peripheral areas.





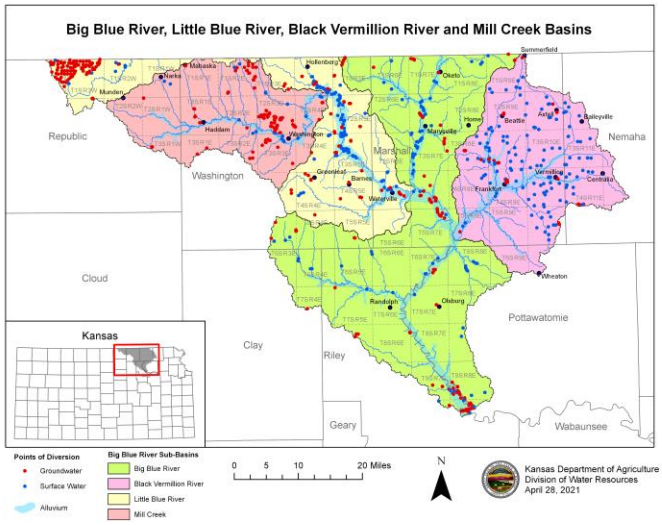
The Department of Agriculture paper filing fee of $20 per file for the required annual water use report remained in effect despite COVID-19. This fee is waived for online filers.

New Development

In 2020, KDA-DWR received 8 new applications (5 for appropriated water rights, 2 for temporary permits, and 1 for a term permit) within the Compact area. This is much less than the 20 applications received in 2019 (13 for appropriated water rights, 5 for temporary permits, and 2 for term permits) within the Compact area. In 2021 so far, KDA-DWR has received 11 new applications (6 for appropriated water rights, 4 for temporary permits, and 1 for a term permit) within the Compact area.

In 2020, KDA-DWR approved 6 applications (2 for appropriated water rights, 2 for temporary permits, and 2 for term permits) within the Compact area. This is much less than the 15 applications approved in 2019 (9 for appropriated water rights, 5 for temporary permits, and 1 for a term permit) within the Compact area. In 2021 so far, KDA-DWR has approved 6 applications (2 for appropriated water rights and 4 for temporary permits) within the Compact area.

We are seeing a significant surge related to new and change applications being submitted thus far in 2021 and our TFO staff have assisted with a total of 74 applications to date- 46 new and 28 change applications.



TFO Activities

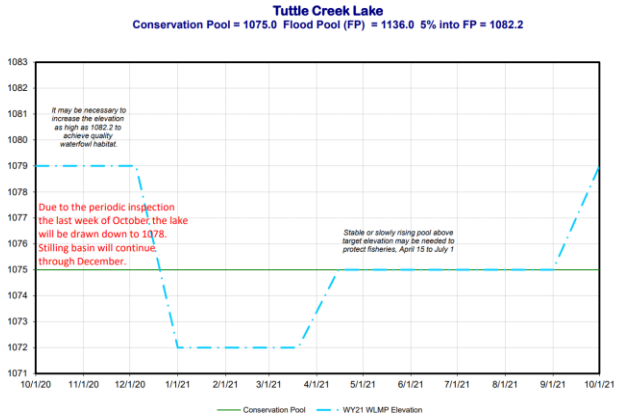
As reported above, we focused our work primarily in 18 of our 44 counties. We have worked through every meter repair/replace check, new or change approval check including term permits, problem file checks, suspect water report reading file and any other issues in each of these counties. These checks consist of fixing GPS for the diversion wells or pump sites, checking and noting equipment, inspecting the meter installation, reviewing reported water use for agreement with the readings taken during our inspection and any customer communication or guidance needed. Our field inspection person has focused on key rate tests.

COVID-19 Operations at the TFO

As reported last year, the TFO was days into a planned move from the South Topeka Agriculture Lab building (also moved to Manhattan next to headquarters) to a location in West Topeka when we received word that the state would be shutting down for 2 weeks due to the COVID-19 pandemic. Our move to electronic files has allowed our office to work nearly entirely remotely over the last 14 months. We have two-thirds of all our files scanned now and during the remote work time, which is currently ongoing, we are able to completely do our work electronically. We again as of this month have a scanning person working that we hope will complete this major project over the next 12 months. One person staffs our office to take main line calls and transfer calls to staff, to collect and deliver mail, and address any customers who may show up at the office with an appointment. Our productivity has been high.

Tuttle Creek Reservoir

Lake Level Management plans were approved in fall of 2020, again as per the previous version approved. The main focus is support of spawning fish and wildlife habitat.



	Time	Elevation	Comment
TUTTLE CREEK LAKE	Oct 1 – Dec 5	1079-1082.2	Attract migrating waterfowl, achieve quality habitat
	Dec 5- Jan 1	1072	Reduce ice damage potential and provide water storage, then hold through Mar 20
	Mar 20 – Apr 15	1075	Rise to reach top of conservation pool and enhance boating then hold through Sep 1
	Apr 15 – July 1	1082.2 max	Evacuate flood water to enhance crappie population. Protect tern and plover nests on the Kansas River
	July 1 – Sep 1	1075	Maintain conservation pool to re-vegetate shoreline. Consideration for navigation.
	Sep 1 – Sep 30	1079	Rise to inundate wetland habitat and attract migrating waterfowl

Kansas River Basin Study

The Kansas River Reservoirs Flood and Sediment Study underway in the greater Kansas basin is ongoing. This study is designed to determine what actions are needed in the basin to extend the life of the reservoirs. The plan is to determine and then take steps to reduce flood risk and increase infrastructure benefits, improve sediment management, mitigate drought, improve water supply availability restore essential ecosystem and enhance water quality and recreation. At this time, the KWO, KDWP&T and USACE are conducting public scoping and outreach meetings to address drought and water supply, sediment management and reservoir sustainability, ecosystem restoration and management, flood risk management, and recreation. The study is expected to take 3-5 years and recommendations are expected in May of 2023. As part of this project, the group is looking at a possible idea of establishing a small pond in the Reservoir for the Access District discussed above.